

SCOPUS

BIRD RINGING IN AN ADDIS ABABA GARDEN

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INTRODUCTION

Between 27 October 1973 and 29 December 1975 I carried out a ringing programme in a garden near the southwestern edge of Addis Ababa, Ethiopia (9°00'N., 38°44'E.). Much is known about the occurrence of birds within the city (Pain, Tyler & Vittery 1975) but this ringing programme was confined to determining the relative abundance and possible seasonal distribution of some garden birds.

Addis Ababa lies on the Ethiopian plateau between 2400 and 2700 m. Surrounding the city are a series of straggling shanty villages interspersed with modern houses and gardens, streams rivers and patches of open grassland. Gums *Eucalyptus* spp. are the most conspicuous trees but indigenous *Juniperus procera* and zigba *Podocarpus gracilior* also occur, particularly in the higher northern part of the city. Acacia trees, notably *Acacia negrei*, are common along rivers and in some gardens; a remnant of acacia woodland occurs on the western edge of the city, beyond which lies rolling grassland, fields of the cereal teff *Eragrostis teff* and the oil crop noug *Guizotia abyssinica*, *Eucalyptus* plantations and small patches of scrubby woodland. My garden at 2450 m was a rectangle, 60 x 35 m; it had a large area of lawn with flower beds and shrubs and was surrounded by a fringe of indigenous trees (tidh, kosso *Hagenia abyssinica*, birbirra *Milletia ferruginea*, grawwa *Veronia amygdallina*) and exotics (*Cupressus*, *Pinus*, *Casuarina*). Some plants were of great importance in attracting various species of birds: Australian *Fuchsia* and the firebush *Streptosolon jamesonii* when in flower, attracted sunbirds while a bramble *Rubus* sp., when in fruit, attracted bulbuls and mousebirds¹.

There are obvious limitations in the use of netting figures to draw conclusions about relative abundance, particularly between different species. Many birds will not be caught because of their aerial or skulking habits or because of remarkable eyesight, whilst other species escape easily from mist nets. Account must also be taken of such variable factors as the number of hours and times of day spent netting, positioning and length of the nets used, and the weather. Birds were most active at dawn and dusk so that netting during the middle part of the day was relatively unproductive.

Netting effort was evenly distributed over the period 08:30 - 18:30. One to five, but usually three, nets (2 x 40 feet and 1 x 60 feet = c. 12 and c. 18 m respectively) were used. Despite the many drawbacks of such a

¹ scientific names of birds are given in Table 1

study the results allow comparison, for example, of the relative seasonal abundance of the two common seed-eaters or of the two species of sunbird found in Addis. The results given here may differ from those obtained from other gardens in the city at a different altitude or with different habitats. Dr E.K. Urban and Dr R.W. Ashford have netted in Addis gardens at c.2600m and their results are referred to in this paper.

NUMBERS OF BIRDS RINGED

A total of 1180 birds of 50 species was ringed (Table 1). Wing-length (maximum flattened chord) and weight were recorded of many of these and are given in Appendix 1. Monthly totals were highest from October to December 1973. Birds were then unused to nets and so were more easily caught. The garden had been unoccupied for a time and weed species flourished, so providing food for seed-eating birds. During 1974 and 1975 the garden became less attractive to some birds as the weeds and other plants were eaten by two bushbucks *Tragelaphus scriptus* and four tortoises *Testudo* sp. As the older residents became wary of the nets, new birds caught tended to be young or birds from passing flocks or migrants.

Table 2 shows the number of birds caught each month when 1974 and 1975 data are combined. The results are expressed as the number of birds caught per 10 h of netting. December shows the lowest figure but little time was spent netting then although netting in December 1973 had been productive. May too was unproductive; Palaearctic migrants had then gone; there were no nearby roosts and few birds were then in flocks because many were breeding following the short rains of March and April.

COMPARISON OF TOTALS OF DIFFERENT SPECIES

From Table 1 it can be seen that the Baglafaecht Weaver was the most often ringed species followed closely by Swainson's Sparrow and Blue-eared Glossy Starling. Tacazze Sunbird, Brown-rumped Seed-eater and Red-billed Firefinch were also commonly caught. Dusky Turtle Doves would have rated higher but for their tendency to escape from nets. However, they were much more commonly caught than Red-eyed Doves and the ringing ratio of 12:1 probably reflects the two species' relative abundance.

The ratio of 2:1 for Brown-rumped v. Streaky Seedeater can be usefully compared because there was no obvious difference in the 'catchability' of the two species. The totals of Ashford and Urban also show the same tendency but their ratio for these two species was far in excess of 2:1 (see Table 3).

The large total of Tacazze Sunbirds was perhaps surprising as, without ringing, it is easy to assume that it is only the same one or two birds which visit the garden each day. Tacazze Sunbirds were much commoner than the smaller Variable Sunbird of which only 19 were ringed. Ashford's and Urban's data are similar to mine for these species (Table 3).

Of the five resident thrushes found in the garden, Olive Thrushes were most frequently ringed. The Ground-scraper Thrush is a bird of open grassland so it is not surprising that few were caught. Similarly Hill Chats favour rocky, open ground and higher altitudes; they are thus more abundant in the northern part of the city than in the southwest and Ashford caught more Hill Chats there than Robin Chats. Urban ringed almost twice as many Olive Thrushes as Robin Chats, cf. my ratio of 2.5:1. Both these species bred in or close to my garden but White-winged Cliff Chats were only occasional visitors, as were the Hill Chats and Ground-scrappers. The three Cliff Chats ringed were all from one family group.

TABLE 1 Total numbers of each species of bird ringed in the garden between 27 October 1973 and 29 December 1975. Palearctic migrants are marked * (month of ringing in parentheses)

SPECIES	No. ringed
Dusky Turtle Dove <i>Streptopelia lugens</i>	83
Red-eyed Dove <i>S. semitorquata</i>	7
*Hoopoe <i>Upupa epops</i> (Oct)	1
Speckled Mousebird <i>Colius striatus</i>	3
Grey Woodpecker <i>Mesopicus goertae</i>	1
*Wryneck <i>Jynx torquilla</i> (Sep 2, Nov 1)	3
*Eurasian Swallow <i>Hirundo rustica</i> (Mar)	1
Red-rumped Swallow <i>H. daurica</i>	1
*Yellow Wagtail <i>Motacilla flava</i> (Dec, Mar)	2
*Tree Pipit <i>Anthus trivialis</i> (Apr)	2
Bulbul <i>Pycnonotus barbatus</i>	5
Tropical Boubou <i>Laniarius ferrugineus</i>	1
*Red-backed Shrike <i>Lanius collurio</i> (Nov)	1
Fiscal <i>L. collaris</i>	8
*Pied Wheatear <i>Oenanthe pleschanka</i> (Oct 2, Nov 2, Dec 2, Mar 4)	10
Hill Chat <i>Cercomela sordida</i>	5
White-winged Cliff Chat <i>Myrmecocichla semirufa</i>	3
*Redstart <i>Phoenicurus phoenicurus</i> (Oct 3, Jan 1, Mar 2, Apr 5)	11
Rüppell's Robin Chat <i>Cossypha semirufa</i>	11
Olive Thrush <i>Turdus abyssinicus</i>	29
Ground-scraper Thrush <i>T. litsipsirupa</i>	6
Cinnamon Bracken Warbler <i>Bradypterus cinnamomeus</i>	1
*Marsh Warbler <i>Acrocephalus palustris</i> (Aug, Sep)	2
*Garden Warbler <i>Sylvia borin</i> (Aug, Apr)	2
*Blackcap <i>S. atricapilla</i> (Oct 1, Nov 3, Apr 3)	7
*Whitethroat <i>S. communis</i> (Aug 3, Nov 1, Apr 1)	5
*Lesser Whitethroat <i>S. curruca</i> (Mar)	1
*Willow Warbler <i>Phylloscopus trochilus</i> (Oct 1, Nov 3, Apr 3)	7
*Chiffchaff <i>P. collybita</i> (Nov 2, Dec 3, Jan 1, Feb 2, Mar 4)	12
Winding Cisticola <i>Cisticola galactotes</i>	16
Tawny-flanked Prinia <i>Prinia subflava</i>	12
Brown Parisoma <i>Parisoma lugens</i>	4
*Spotted Flycatcher <i>Muscicapa striata</i> (Oct 3, Apr 2, May 1)	6
White-eyed Slaty Flycatcher <i>Melaornis chocolatina</i>	16
White-backed Black Tit <i>Parus leuconotus</i>	1
Variable Sunbird <i>Nectarinia venusta</i>	19
Tacazze Sunbird <i>N. tacazze</i>	108
Green White-eye <i>Zosterops poliogastra</i>	15
*Ortolan <i>Emberiza hortulana</i> (Apr)	2
African Citril <i>Serinus citrinelloides</i>	32
Streaky Seed-eater <i>S. striolatus</i>	46
Brown-rumped Seed-eater <i>S. tristriatus</i>	93
Purple Indigo Bird <i>Hypochera chalybeata</i>	35
Yellow-bellied Waxbill <i>Estrilda melanotis</i>	1
Waxbill <i>E. astrild</i>	2
Red-billed Firefinch <i>Lagonosticta senegala</i>	93
Baglafecht Weaver <i>Ploceus baglafecht</i>	156
Red-billed Quelea <i>Quelea quelea</i>	2
Swainson's Sparrow <i>Passer swainsonii</i>	149
Blue-eared Glossy Starling <i>Lamprolornis chalybaeus</i>	140

One of the chief interests of a ringing programme is that some species that could pass through an area unobserved will be netted and so recorded. Several species are on the Addis Ababa checklist solely from records of birds caught in mist nets, for example Red-backed Shrike and Marsh Warbler.

Seventeen Palaearctic species were ringed in the garden (see Table 1). Many of these were presumed to be on passage with Marsh and Garden Warblers and Whitethroats caught only in late August and September (and the two *Sylvia* spp. again in April), while Pied Wheatears, Chiffchaffs and Yellow Wagtails overwintered in the city. Chiffchaffs and Blackcaps fed on aphids

TABLE 2

Number of hours spent ringing each month and numbers of new birds and of retraps (birds ringed in a previous month) of 12 species for each month when data for 1974 and 1975 are combined. Numbers of new birds and of the total catch are estimated for 10 h mist-netting each month

	Oct-Dec 1973	J	F	M	A	M	J	J	A	S	O	N	D	Totals
h of netting	203	70	98	178	193	132	125	140	58	106	242	121	37	1703
No. of 12 spp.														
Dusky Turtle Dove	19	3	7	6	12	2	7	5	3	4	8	6	1	83
Olive Thrush	6	1	2	2	6	5	3	1	0	0	2	1	0	29
Variable Sunbird	0	0	0	1	5	2	7	3	0	1	0	0	0	19
Tacazze Sunbird	8	3	9	22	10	3	5	13	6	14	11	3	1	108
African Citril	12	0	0	1	1	4	5	5	2	0	2	0	0	32
Streaky Seed-eater	16	0	0	5	2	7	4	6	0	0	5	1	0	46
Brown-r. S.-eater	29	4	3	13	8	3	4	7	2	6	7	7	0	93
Purple Indigobird	1	0	1	0	4	0	2	12	1	5	8	1	0	35
Red-b. Firefinch	4	4	3	6	9	7	17	14	12	9	5	3	0	93
Baglafaecht Weaver	90	4	4	9	4	16	5	5	4	5	6	4	1	156
Swainson's Sparrow	23	1	10	20	23	9	6	8	3	18	12	14	2	149
Blue-e. G. Starling	53	12	17	1	0	0	0	0	1	6	37	12	1	140
Total new birds	310	50	65	108	114	61	71	82	43	77	127	65	7	1180
New birds/10 h	152	71	66	61	59	46	57	58	74	73	52	54	19	6.9
Total No. retraps	22	4	12	14	16	11	23	19	7	15	25	14	0	182
New birds + retraps per 10 h	163	77	78	68	67	54	75	72	86	86	63	65	19	8.0

on old *Brassica* plants in the garden in October and November. The three Wrynecks are of interest; Ash (1977) has caught them frequently in winter at lower altitudes in Ethiopia and the species is much commoner in the country than indicated by Urban & Brown (1971). One of the Addis birds presumably wintered in the city: it was first caught on 6 Nov 1973 and subsequently retrapped in late December and finally reported dead nearby in March.

SEASONAL MOVEMENTS

Table 2 shows the breakdown of catches of 12 common species for October to December 1973 and for each month thereafter. Large catches of Baglafaecht Weavers were made in November and December 1973 when flocks of weavers, with a large proportion of young birds, were feeding on grassland adjacent to the garden. These large catches in these two months account for the

TABLE 3

A comparison of the totals (expressed as the percentage of the sum total) of 17 species ringed in three gardens in Addis Ababa. Totals of the 17 species are given in parentheses

Species	Ashford (244)	Urban (340)	Tyler (843)
Dusky Turtle Dove	-	1.5	9.8
Abyssinian Catbird ¹	-	0.3	-
Olive Thrush	-	4.4	3.4
Rüppell's Robin Chat	0.8	2.1	1.3
Hill Chat	2.4	0.3	0.6
White-eyed Slaty Flycatcher	-	0.9	1.9
Dusky Flycatcher ²	0.4	-	-
Tacazze Sunbird	10.2	5.6	12.8
Variable Sunbird	0.4	0.3	2.2
Yellow-crowned Canary ³	0.8	0.3	-
Streaky Seedeater	2.0	4.7	5.4
Brown-rumped Seedeater	48.8	36.7	11.0
Pin-tailed Whydah ⁴	1.2	0.3	-
Red-billed Firefinch	20.9	3.8	11.0
Purple Indigobird	11.9	-	4.2
Baglafaecht Weaver	-	32.9	18.5
Swainson's Sparrow	-	5.9	17.7

¹*Parophasma galinieri*, ²*Muscicapa adusta*, ³*Serinus canicollis*, ⁴*Vidua macro-ura*

TABLE 4

Retrap data for 18 species of garden bird in Addis Ababa

Species	Total No. caught	Retrapped No.	%	Max. No. Retraps	Max. interval*
Dusky Turtle Dove	83	3	3.6	2	8
Bulbul	5	-	-	-	-
Fiscal	8	4	50.0	2	15
Rüppell's Robin Chat	11	2	18.2	1	3
Olive Thrush	29	8	36.3	6	17
Winding Cisticola	16	3	18.8	5	7
Tawny-flanked Prinia	12	5	41.6	1	21
White-eyed Slaty Flycatcher	16	2	12.5	2	2
Variable Sunbird	19	-	-	-	-
Tacazze Sunbird	108	8	7.4	1	7
African Citril	32	2	6.2	2	8
Streaky Seedeater	46	12	26.0	8	22
Brown-rumped Seedeater	93	15	16.1	10	24
Red-billed Firefinch	93	7	7.5	3	17
Baglafaecht Weaver	156	12	7.7	2	4
Swainson's Sparrow	149	13	8.7	5	11
Blue-eared Glossy Starling	140	-	-	-	-

* in months. The maximum number of retraps refers to the maximum number of times that any bird was retrapped, in months, after the month in which it was ringed. If a bird was retrapped several times in one month this is nevertheless counted as one retrap for that month.

species' position at the top of the totals list. Similarly, large numbers of Blue-eared Glossy Starlings were caught in December 1973 and January 1974, again in October and November 1974 and in October 1975. In these months the starlings gathered in and near the garden for an hour before dusk, when they flew up to roost in a large gumtree closeby. Up to 1000 starlings used this roost in the three successive seasons; occupation of the roost was for a short period only and then the flocks either dispersed or moved elsewhere.

Sunbird numbers also showed seasonal differences. Tacazze Sunbird ringing totals varied from one per month to as many as 17. In only one month, June 1975, was no Tacazze Sunbird caught. The main breeding season of this species is from April to August, and so the many individuals caught between February and April were probably adults moving about prior to establishing a breeding territory. Numbers caught then remained low in May and June when the sunbirds were nesting, but became higher from July to October when young birds had fledged and adults dispersed.

Between June and August 43 Red-billed Firefinches were ringed - 46.2% of the total ringed during the 26 months of the study. At this time of year the firefinches were moving about in large flocks. A possible seasonal movement is also indicated by the Brown Parisoma records: only four were caught but these were in December 1973 (2), October 1974 (1) and October 1975 (1).

RETRAP DATA

Ringling and retrap data can sometimes be used to assess the size of a population and to give an indication of survival rate and ingress (Hounsborne 1978), but mark/recapture methods cannot be used for my data because they were collected too erratically and the garden was too small in area. However, garden species of which few or none were subsequently retrapped were usually very mobile, for example Blue-eared Glossy Starling and Baglafaect Weaver. Both these species were abundant in the city and flocked in certain months. I ringed 140 starlings but retrapped none and only 12 of 156 weavers ringed were retrapped. Similarly, only 3 of 83 Dusky Turtle Doves were retrapped; this suggests that either this dove is a very mobile species, or that I had only caught a small proportion of those which visited the garden.

By contrast, resident species showed a high proportion of retraps. Thus, of the Fiscals and Olive Thrushes ringed, 50% and 36.25% respectively were retrapped, as were 5 of the 12 Tawny-flanked Prinias ringed. Twenty-six per cent. of the Streaky Seedeaters were retrapped compared with only 16% of the Brown-rumped Seedeaters and 7.5% of the Red-billed Firefinches. Again, this suggests that firefinches are more mobile or more abundant than the seedeaters or, alternatively that their mortality rate is higher. Ashford, however, had more frequent retraps amongst firefinches than amongst Brown-rumped Seedeaters and he suggested that this indicated a greater population of the seedeater than of the firefinch. The reverse was the case in my garden; though possibly at higher altitudes seedeaters are more abundant or are more mobile.

The study period was too short to produce any longevity records of note, although many birds ringed in October and November 1973 were still alive two years later. A few birds have been reported dead outside the garden but within the city; these include Tacazze Sunbird, Baglafaect Weaver and Fiscal. Dr J.S. Ash has gained many longevity data for birds in Ethiopia and Urban (1975) listed his longevity data obtained in Addis

from 1968 to 1975.

Weights of birds (to the nearest 0.5g) are given in Appendix 1. The mean weights are similar to, but slightly greater than Urban's weights for all species for which he gave data except for the Dusky Turtle Dove and Swainson's Sparrow. His Dusky Turtle Dove mean weight is outside my recorded weight range. Wing-lengths (maximum flattened chord) are also given for 25 resident species in the Appendix.

The data in this paper are presented as an indication of work which remains to be done on population aspects of Ethiopian birds. Little is yet known of the mobility of common 'residents', of their breeding cycles and the seasonal movements they may undertake.

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Appendix 1 is on p.8 overleaf

APPENDIX 1 *Wing-lengths and weights of some garden birds in Addis Ababa. Wings were measured along the maximum flattened chord. Lengths in parentheses refer to a few short juvenile wing measurements, whereas mean lengths in parentheses are those means obtained when the juvenile measurements are included. The column headed 'Urban' gives the mean weights obtained by him in his garden*

Species	Wing-length (mm)			Weight (g)			Urban
	n	range	mean	n	range	mean	
Dusky Turtle Dove	46	165-185 (135,148)	175.2 (173.8)	20	136-169	155.3	10.85 193.3
Fiscal	7	91-98	94.4	6	36-39.5	36.8	1.37 -
Rüppell's Robin Chat	9	75-85	78.9	4	26.5-30	28.0	1.58 26.9
Olive Thrush	25	109-122	115.7	15	60-76	67.3	4.69 65.9
Ground-scraper Thrush	5	123-137	131.4	5	68-78.5	74.8	4.31 -
Winding Cisticola	13	52-63	58.0	12	10.5-15	13.8	1.28 -
Tawny-flanked Prinia	10	48-55	51.3	8	9-11.5	9.9	0.86 -
Brown Parisoma	3	63-67	65.7	2	14-15.5	14.5	1.06 -
White-eyed Slaty Flycatcher.	10	84-90	87.3	8	22-27	23.4	1.63 22.0
Variable Sunbird	8	48-53	50.9	5	6.5-7.5	6.9	0.42 6.8
Tacazze Sunbird	65	66-83 (60)	75.2 (75.0)	34	12-19	16.5	1.65 M15.9 F13.8
Green White-eye	9	62-68	64.4	14	12-16	13.4	1.09 -
African Citril	28	66-78	68.9	24	13-17	15.0	1.07 -
Streaky Seed-eater	38	66-75	71.0	35	19.5-25.5	22.4	1.53 21.0
Brown-rumped Seed-eater	65	64-70	66.2	40	15-20.5	17.2	1.19 15.5
Purple Indigobird	8	61-71	63.2	4	12.5-14.5	13.5	0.82 -
Red-billed Firefinch	50	49-59	51.8	23	8.0-12.0	10.7	0.67 9.5
Baglafaecht Weaver	124	74-88	79.7	114	24.5-37.5	31.5	2.36 31.6
Swainson's Sparrow	97	77-94	85.4	64	25.0-41.5	33.9	2.86 31.6
Blue-eared Glossy Starling	112	131-161	145.8	37	84.0-127	100.5	11.08 -